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EMOTION AS A PRODUCT OF LEISURE: CAUSES AND
CONSEQUENCES

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Emotion as a Product of Leisure: Causes and Consequences

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(DRAFT VERSION: COMMENTS WELCOME)

Summary

The purpose of this paper was to demonstrate, through a review of the literature, that mood is a significant, prevalent and relevant product of leisure activities in general and outdoor recreation activities in particular. To accomplish this, a definition of mood was put forward which hopefully will promote constructive debate about issues pertaining to mood, leisure, and outdoor recreation. Mood was defined as being composed of three major dimensions: arousal, pleasure, and dominance. This definition was tied to several established emotion theories. Arousal is the most important dimension. It results mostly from cognitive, but not necessarily conscious, evaluations of situations. The most salient cause of mood change is related to one's plans and goals, which are assumed to be a pervasive part of one's life in the 21st century. The degree to which one's goals are facilitated or blocked determines one's mood state. It was noted that mood state can change in response to innate programmed responses to select stimulus sets and/or preferenda but that these situations are thought to be rare and overshadowed by cognitive factors influencing emotion.

Mood was introduced as a integral part of many leisure theories and as a likely product of leisure experiences. Mood can be significantly influenced by characteristics of the physical and social setting. Many of these environmental characteristics are under the control of environmental management, suggesting that mood is somewhat under the control of recreation management. The significance of mood was demonstrated by reviewing the impacts of mood on one's cognitions, behaviors, and physiology. These impacts include learning, task performance, helping behavior, socialization, self-concept, and health. Perhaps the most significant impact of mood is its influence on the planning of future events and, as such, its influence on the behaviors and cognitions of persons long after they leave the leisure setting. It is important to note that these impacts of emotion are socially relevant -- in some cases they translate to dollars and cents. It may not be unreasonable to suggest that mood is one of the more socially relevant products of leisure activities. In fact, the benefits resulting from mood induced by a leisure experiences may be one of the major justifications to society for the expenditure of its resources on the provision, management, and study of leisure.

Despite the apparent significance of mood, little relevant research exists in the leisure and recreation research fields. Four broad areas of research need developing: theoretical and empirical studies of the role of emotion in leisure activities, improvements of noninvasive measurement technology, documentation of the socially relevant impacts of leisure induced mood, and assessment and understanding of the impact on mood of manageable characteristics of the social and physical environment.

INTRODUCTION

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The purpose of this paper is to document findings which demonstrate that emotion is both a prevalent and a relevant product of leisure activities, worthy of management and study. The causes and consequences of emotion are neither irrational nor intangible, despite popular misconceptions to the contrary. Rather, emotion is a predictable, measurable and theoretically grounded construct which is a logical and socially relevant product of leisure activities. In fact, emotion may be one of the more relevant products of leisure management efforts. It is suggested here, that theoretically grounded emotion theory can facilitate both a better understanding and the more effective management of leisure activities. For the purposes of interpreting and defining emotion in the context of leisure, the paper is divided into six major sections:

- 1) Selected leisure theories and empirical findings are reviewed to note that there exists a considerable body of literature suggesting that emotion has an important role to play in leisure activities and leisure studies.
- 2) Considerable effort and text are devoted to defining emotion because the concept is easily misunderstood by the lay person and by experts in related fields. Moreover, the area of study is a new one and only a few attempts have been made to interpret emotion in the context of leisure or outdoor recreation.
- 3) The factors which impact emotion are discussed in some detail because it is they that must be managed in order to influence the emotion recreationists experience during leisure activities.
- 4) The subtle yet significant and pervasive impact of emotion on human behavior, cognition and physiology are discussed in order to illustrate the relevance of emotion produced through leisure.
- 5) Issues pertaining to the measurement of emotion are introduced.
- 6) Several research topics deserving immediate attention are outlined.

Note that the discussion which follows is not meant to be exhaustive, but rather it attempts to contribute to the work on leisure induced emotion which is just now beginning in earnest. When possible, the findings and theories presented here are interpreted in the context of leisure and outdoor recreation, but many examples and interpretations are of a more general nature. Throughout the paper "R" is used to denote recreationist and the terms mood and emotion are used interchangeable.

1. EMOTION AS A PRODUCT OF LEISURE

That a recreationist experiences emotions becomes obvious when reading personal literary accounts of environmental experiences (i.e., Abby 1961, Muir 1965, Lopez 1986). These writers are inspirational in their introspective accounts of the emotional feelings they experience while in the great outdoors. This intuitive, introspective position is further supported by empirical and theoretical findings. For example, Shaffer and Mietz (1969) found that emotional and aesthetic experiences were the primary motivations for visiting natural areas reported by recreationists (similar findings are reported by Hawes, 1979; Klausner, 1977). Hammitt (1980), and More and Payne (1978) documented that emotions varied as a result of participation in leisure activities. Stone (1987) traced the moods associated with different daily events of 79 persons for over 84 days and found that leisure events were significantly associated with positive and desirable moods; more so than most any other type of daily event. Ulrich (1983) extends some aspects of emotion theory to explain preferences for natural landscapes. Knopf (1987) reviews recreation literature and defines the character of transactions between persons and the natural environment using three dimensions: meaning, which pertains to the goals and motivations of recreation involvement; cognitive processes, which concerns how persons mentally represent environments; and *emotion*, which concerns how and to what degree natural environments affect visitors' emotional states. Similarly, Gunter (1987) identified eight properties of leisure: five of which seem related to emotions (pleasure, enjoyment, fantasy, adventure, spontaneity).

The quest for excitement is noted as a major motivation for leisure pursuits (Mercer 1976). Elias and Dunning (1969) note that opportunities to experience and express emotions are severely limited in modern society and contend that emotions evoked via leisure pursuits are critical to maintaining quality of life:

"Only children jump in the air and dance with excitement; only they are not immediately censored as uncontrolled or abnormal if they publicly cry and shake with tears in their sudden grief, if they panic in wild fear, or if they clench their fists and beat or bite the hated enemy with complete abandon when they get excited. To see grown-up men and women shaken by tears and abandon themselves to their bitter sorrow in public, or panic in wild fear, or beat each other savagely under the impact of their violent excitement has ceased to be regarded as normal... [Adults]...who openly act in a highly excited [emotional] manner are liable to be taken to hospital or to prison." (52).

"In societies such as ours which require an all-round emotional discipline and circumspection, the scope for strong pleasurable feelings openly expressed is severely hedged in. For many people it is not only in their occupational but also in their private lives that one day is the same as another. For many of them, nothing new, nothing stirring ever happens. Their tension, their tonus, their vitality, or whatever one might call it is thus lowered. In a simple or complex form, on a low or high level, leisure time activities provide for a short while, the upsurge of strong [emotional] pleasurable feelings which are often lacking in the ordinary routines of life. Their function is not simply, as is often believed, a liberation from tensions but the restoration of that measure of tension which is the essential ingredient of mental health. The essential character of ... [leisure's] cathartic effect is the restoration of normal mental "tonus" through a temporary and transient upsurge of pleasurable excitement [emotion]" (Elias and Dunning 1969: 81-82).

Approaching leisure from a different perspective, Csikszentmihalyi (1975) theorizes that certain combinations of challenge and ability create the sensation of "flow" which makes tasks intrinsically rewarding. It is this feeling which motivates many persons to engage in pursuits (such as leisure activities) which don't reward participants with socially sanctioned extrinsic rewards such as money, power, prestige. If it were not for the experience of flow, persons might not climb rock cliffs, play chess, produce art, or engage in the numerous activities (such as leisure) which require considerable effort but don't normally return extrinsic rewards. The state of "flow" can be interpreted as a positive emotional state. Thus, it seems the attainment of an emotional state motivates persons to participate in numerous activities, many of which would be classified as leisure activities.

These theoretical and empirical studies suggest that emotion plays an important role in leisure experiences. It is unclear whether emotion is an explicit motivator for participation in leisure activities, but there can be little doubt that it is a salient product of most leisure experiences. Thus it seems an important area for study. The purpose of the next section is to define emotion (and mood) in some detail in order to facilitate a more rigorous discussion of the topic as it pertains to leisure.

2. DEFINITION OF EMOTION

Human emotions have been the objects of speculation for poets as well as psychologists, for painters and composers,

for behaviorists and cognitive scientists. Few have adequately answered the question what emotions are or how they may be captured -- in a theory, a poem, or a computer program. The emotion in the singular is often well portrayed by anyone who cares to understand others and themselves. We seem to understand the emotion felt or displayed, but the search for the simple explanation of emotions in general seems to escape us" (Mandler 1984: 1).

Emotion has been the focus of inquiry, speculation and debate perhaps for as long as man has pondered his existence. Notable past contributors include Aristotle, Darwin, Dewey, Freud, William James, Kant, and Wundt. The work of these scholars, and the more recent scholars listed in the literature cited section of this paper, has not resulted in consensus. Nonetheless, most would agree that emotion consists of behavioral, physiological, and cognitive processes. Yet even within this very broad, some say too broad, definition there is considerable debate as to what combination of these components is needed to completely define emotion -- for example, is a change in skin conductivity alone, sufficient? This is one of the many issues this paper will identify but not resolve. The purpose of this section of the paper is to define emotion with sufficient specificity to facilitate rigorous discussion of the role of emotion in leisure and outdoor recreation. This is not an easy task, emotions are enormously complex and difficult to observe. Many attempts to define emotion exist and none of these are entirely satisfactory. The approach taken here is to first describe the three basic components of emotion and review the debate which revolves around the relationships among them. This is followed by a definition of some key terms. Then several previous attempts at categorizing emotion will be reviewed. The lion's share of this section is then devoted to describing the theory of emotion adopted here and using it to define emotion in some detail.

Basic Components of Emotion

The *behavioral component* of emotion includes expression (i.e., nonverbal communication), action (i.e., fight or flight), and attention. Several theorists (i.e., Izard 1971, 1977; Tompkins 1970) also suggest that emotion is a motivator of behavior. Leeper (1948, 1970) suggests that emotions are behavior organizing response systems (rather than disorganizing systems) which have adaptive significance and evolved prior to advanced cognitive processes. He suggests emotions function as a mechanism to summarize perceptual information and to initiate responses which

promote survival. These and other behavioral consequences of emotion are discussed later, in section four. The *physiological component* of emotion includes changes in the arousal/activation level of the organism. It is not clear whether the physiological change correlated with a particular emotion is unique to that emotion. Evidence exists which suggests the physiological response is of a general type, not specific to a particular emotion and that specific emotions are distinguished by cognitive evaluation of the situation (e.g., Schachter and Singer 1962, Mandler 1984). However, some recent research has associated specific autonomic nervous system activity with specific emotional states (Ekman, Levenson and Friesen 1983). The *cognitive component* of emotion includes self-awareness of one's mood state. It also includes, and here the debate starts to thicken, the cognitive appraisals made in the context of personal goals, capabilities, and the socio-economic context. This appraisal has at least two functions.

One function is to decide whether the organism is threatened or its goal is frustrated and thus whether the organism should attain a higher level of activation (and hence emotion) to solve the problem at hand. This implies that cognition occurs prior to emotional response. The increased arousal state results from cognitive processes which note a gap in the person-environment fit. A second function of cognitive appraisal is to decide whether one's increased state of arousal (cause known or unknown) is of a positive or negative nature and thus whether the resulting mood should be positive or negative. This interpretation suggests it doesn't matter whether arousal results from cognitive or noncognitive factors and the function of cognitive appraisal is merely to label the changed arousal state as being positive (love, excitement) or negative (hate, boredom). The state of knowledge is such that it is unclear whether both, neither or either interpretations are correct. Theoretical debate continues in the literature.

Part of this debate focuses on the order in which the cognitive, behavioral and physiological components of emotion occur. At one extreme, it is suggested that physiological and behavioral changes occur first, as a preprogrammed, instinctual response to a particular stimulus set. Physiological (i.e., arousal) and/or behavioral (i.e., a smile) responses to the stimulus set are then cognitively recognized and assessed. Only after this assessment is made is one aware one is experiencing an emotion. The position at the other extreme suggests that emotion involves a detailed cognitive assessment of (internal or external) stimuli which cause emotion. The assessment is based on the socio-environmental constraints of the situation and on the goals and abilities of the person. If the evaluation identifies a need for action -- a threat to realizing a goal, for example -- then the organism increases its level of activation. This

activation may be of a general type which combines with cognitive powers to tailor appropriate physiological, behavioral and cognitive response (i.e., Mandler 1984) or it may be a specific, innate, emotional program which triggers preset behavioral, physiological and cognitive responses (i.e., Tomkins 1970).

This debate is still very much alive and well. An informative exchange of ideas has recently taken place in the literature. Zajonc (1980, 1984) and Zajonc and Markus (1984) present evidence and rationale for why emotional reactions don't need much cognitive appraisal. Zajonc contends that affective reactions to stimuli often occur prior to and/or independently of simple cognitive appraisals such as recognition. Zajonc proposes that "preferenda" are "...gross, vague, and global" properties of stimuli containing insufficient detail for cognitive appraisal but sufficient detail to evoke a useful emotional response during the early stages of information processing (1980: 159). He cites as evidence the "exposure effect" with which he and others (i.e., Matlin 1971) have demonstrated that, under certain conditions which limit subjects' abilities to recognize a stimulus, prior exposure to the stimulus can influence the intensity with which subjects like (or dislike) it. That is, increasing objective familiarity (exposure) with a stimulus increases perceived liking but not subjective familiarity (recognition) and thus emotional response (liking) occurs without cognition (recognition). However, Russell and Woudzia (1986) identify potential methodological problems with these studies. They also clarified and critiqued Zajonc's argument and concluded that the case for emotion preceding or being independent of all cognition is questionable. And, perhaps more importantly, Russell and Snodgrass (1987) suggest that precognitive mood represents a situation which, at best, is relevant only in very few and very special cases. Lazarus (1982, 84) and Lazarus, Averill and Opton (1970) present the case for a cognitive theory of emotion: "Cognitive activity is a necessary precondition of emotion because to experience an emotion, people must comprehend ... that their well-being is implicated in a transaction" (1984: 124). He goes on to say: "The transformation necessary to produce an emotion out of sensory states is an appraisal that those states are favorable or damaging to one's well-being" (1984:126). According to this line of reasoning cognitive appraisal of a situation relative to one's goals and needs is a necessary condition for emotion. This debate about the role of cognitive process in emotion does not contradict a main point to be made in this paper: that emotion (whether based on cognition or not) has a substantial influence over many cognitive behavioral and physiological processes and that people are not consciously aware of much of this influence.

Definition of Important Concepts

Every attempt must be made to develop a precise vocabulary to serve as a basis from which we can work towards an understanding of emotion. It is important that data and theories rather than the semantics are the causes of debate. Toward this end, an attempt will be made to define various qualities of emotion in enough detail that they can be used as the basis for discussions in the remainder of the paper. Two qualities of emotion will be defined: emotion type and character. It is important to define emotional type in order to reliably distinguish between different emotional states: for example, excitement and stress; relaxation and boredom; love and hate. The need to define emotional character pertains to the need to clarify emotional expression, intensity, and attribution. Prior to defining emotional type and character, two other critical concepts used in this paper need clarification: plan (goal) and cognition.

Cognition

The purpose of this paper is to define and discuss emotion. Since emotive and cognitive processes are assumed to be interdependent (following from Izard, Zajonc, Kagan 1984) it seems appropriate to explicitly, albeit briefly state this assumption and provide a definition of cognition from which a definition of emotion will be developed. As Izard suggests "...there is a heuristic advantage in maintaining a distinction between emotion as we feel it and experience it in consciousness and the accompanying cognitive processes in consciousness, which we do not feel" (1984: 24). But despite this heuristic advantage, it is assumed here, as Izard goes on to conclude, that the two systems are largely "interdependent." Cognition is defined here as a very broad, inclusive set of processes. It is concerned with the symbolic processing of information that is required for recognition, learning, evaluation, recall, and other information processing activities. It collects, stores, interprets and generates knowledge. This definition does not limit cognition to conscious thought. In fact, it is suggested that most cognitive processes are unavailable to introspection (Nisbett and Wilson 1977).

Plan

Man is a goal driven creature. Everything one does is done in pursuit of some goal. This is not as grand a notion as it may seem. A goal may reflect a basic need such as eating, drinking and sleeping; it may reflect an ordinary activity such as turning on a light or dressing for work; or it may involve something more elaborate and long term like finishing this paper before the conference deadline. To accomplish these goals one makes plans. Plans are sequences of events which must be accomplished in order to achieve the goal. The plan is determined by the particular characteristics of the goal, by the expectations of environmental obstacles which must be negotiated, and by expectations of personal abilities to negotiate these obstacles. Each event in the plan becomes the goal of a more specific plan. Thus, a plan is a hierarchically organized sequence of events, with each event itself composed of a sequence of subevents. Presumably, the hierarchy extends from the top goal, finishing this paper, for instance, down to motor actions required to punch the keyboard. This notion of a plan is compatible with the theories presented by Ittelson, Proshansky, Rivlin and Winkel (1974), Kelly (1955), Miller, Galanter and Pribram (1960), Minsky (1986) and many others. The bottom line is simply that a person enters an environment with a purpose, that is, with a plan. This plan determines to a large extent what in the environment is relevant and what is not. Environmental characteristics which have the potential (affordance?) to facilitate or hinder a plan will be attended to: when one is tired, one looks for a place to sit. The more critical or pressing the goal, the more intense one will be and the less attention one must pay to irrelevant environmental characteristics. Thus, the first time bus driver, transporting a load of school children in a heavy snow storm will probably not notice or be influenced by the beauty of a winter, rural landscape but may be impaired by confusing signage or distracting powerlines. Determining what is important and what is irrelevant to a plan is a cognitive process. In order to determine the relevance or irrelevance of an environmental feature, in order to decide whether something can facilitate or hinder accomplishing one's plan, one must recognize and evaluate that object in the context of its potential impact on the plan.

It is an assumption of this paper that modern Man is overwhelmed with plans. Plans to succeed, plans to relax, plans to buy things, plans to learn, plans to attend conferences, plans to love, plans to escape, plans to avoid rush hour, plans to buy fresh brown bread. Not only does society teach us to plan but our pace of life demands it. Thus, it is assumed that most people evaluate environments with salient plans in mind. This line of reasoning makes cognitive processing a necessary precondition for most responses to environments, including emotional. Please note, following from Nisbett and Wilson

(1977), the planning process need not be entirely open to introspection and hence one can cognitively plan without being consciously aware of it. Plans of modern Man are so complex and so varied that preprogrammed "preferenda" can be relevant in only a very few cases. As is evidenced by this discussion, the theory of emotion presented in this paper is by and large a cognitive one. The importance of the plan makes this so. The cognitive and emotive systems are seen as being interdependent. Thus, in some instances they may be independent, but given the importance and salience of a person's plan these instances are likely to be rare.

Categories of Emotion

Defining types of emotion is a difficult task. Intuitively everyone knows what an emotion is and can effectively use descriptive words to describe how they feel. However, when asked to get specific about what these words actually mean it is difficult for a lay person to do more than hem and haw. The meanings associated with common language words used to describe emotion are likely to be vague and vary from individual to individual. This is because the terms one uses to describe subjective emotional states are not subject to collaboration and testing in the "objective" social/physical environment. Many descriptive words (i.e., hot, blue, big) can be tested and learned in a social context by comparison to physical referents and collaboration by other persons. Emotions, on the other hand, have no observable physical referent, no basis for comparison. We can not share one another's raw emotional experiences. Mandler (1984) notes the "trap" of trying to define emotion using common language – a trap of which we must be wary. Instead he recommends a new, scientific emotion vocabulary be defined. "Common language serves – in the first instance – as communication, and, as such, it is appropriately redundant, vague, over inclusive, and ambiguous. A common language that is nonredundant, precise, and unambiguous would require much more cognitive effort on the part of both speaker and listener than the organism usually has available. Scientific language, on the other hand, is a vehicle for description and explanation. If it were redundant, vague, and over inclusive it would fail exactly on the requirements of precise definition and unequivocal explanation" (1984: 7). An attempt will be made to develop and use precise definitions.

Fehr and Russell (1984) describe two basic types of definitions for emotions, and all phenomena in general: the classic and the prototypical. The classic definition type

requires that emotions be defined by one or more features which are individually necessary and jointly sufficient – this is the mental pigeon hole. In order to satisfy the conditions of a classic definition, the categories of emotion must be mutually exclusive and the boundaries must be obvious. In contrast, the prototypical definition -- purported by Rosch (1978) -- organizes emotions around the clearest examples, the prototypes. Emotions are defined by the degree to which they resemble a prototype: the more similar an emotion is to a prototype, the better defined it will be. The boundaries between prototypical emotions are fuzzy and ill defined (i.e., when relaxation turns into boredom). Fehr and Russell (1984) conclude that the necessary and sufficient features required for a classical definition have not been found using terms taken from common language. They suggests prototypical definitions have promise for *describing* emotions as a whole and especially for describing emotions using common language. Prototypical definitions may not, however, be best used as a means to explain and predict these phenomena. Thus, prototypical categories are useful for defining emotion as it is understood by all who care to be introspective and translate that introspection into common language to be understood by others (i.e., self-report, verbal questionnaire). However, more specific definitions are needed to allow scientific pursuit of understanding and prediction.

There have been numerous attempts to identify and theoretically justify the fundamental, qualitatively different types of emotions from which are derived, through their combination, other emotional states. In light of the work of Fehr and Russell (1984), these emotions might best be thought of as prototypical. Tomkins (1981) identifies fear, anger, enjoyment, disgust, interest, surprise, contempt, shame, and distress. Izard (1977) identifies fear, anger, joy, disgust, interest, surprise, contempt, shame, sadness, and guilt. Plutchik (1977, from Mandler 1984) identifies fear, anger, joy, disgust, anticipation, surprise, sadness, and acceptance. Six emotions are shared by these three theories. However, the process and mechanisms proposed to generate these six emotions differ from theory to theory. That is, while these theories use similar terms to describe emotion, there are differences among the processes which are postulated to cause each emotional state. Moreover, these theories of emotion tend to focus more on people-people interactions instead of people-place interactions. While the two should not be thought of as distinct, the latter emphasis is of primary concern to outdoor recreation management, which has some control over the environment. Furthermore, Kagan (1984) points out that the emotions Western psychologists designate as primary may be more the result of cultural biases than anything else.

These biases would emphasize those emotional phenomena which have pragmatic consequences to socially relevant concerns. The so called fundamental emotions listed above tend to interfere or sustain tasks considered important in Western culture, such as difficult thought, coping with a challenge, capacity for love, work and relationships, and successful communication of complex ideas. The theory of emotion presented below consists of three major dimensions --pleasure, arousal and dominance -- which, when combined, define a wide variety of emotional states.

Character of Emotion

In addition to defining the types of emotion one is likely to experience, there are still notable ambiguities in the language used to refer to emotion. For example, what is the difference between feeling, emotion, affect, mood and so on? What is the difference between feeling excited, appraising a place as potentially exciting, and acting excited? Russell and Snodgrass (1987) have taken great strides in refining our understanding of these issues and the terms and definitions which follow borrow heavily from their work. *Mood* is defined as the "core emotional feelings of a persons subjective state at any given moment" (pg 247). One is assumed to always be in a mood of some type. Stone (1987) tracked people over many days found evidence suggesting that people were always in some mood state. We may or may not be consciously aware of the mood or its effects but when asked to be introspective and provided with a verbal report instrument, we can assess our own mood. Thus mood is defined as the subjective state assessed through introspective appraisal and verbal report using the three dimensions of pleasure, arousal and dominance. There may or may not be physiological or behavioral correlates to the subjective state; the definition adopted here does not require it. *Emotional disposition* refers to the general tendency of persons to be in one mood rather than another. A person may be generally happy or relaxed or nervous. this is a person's particular trait or temperament. *Emotional affordance* of an object, person or situation refers to the cognitive appraisal of the mood inducing qualities of that object, person, or situation. It may not refer to the current mood state of the person doing the appraisal. For example, a wilderness experience may be assessed as potentially relaxing, a white water raft trip as potentially exciting, and camping with your mother in-law may be viewed as potentially stressful. All these assessments can be made while one is sitting at home, watching TV, feeling relaxed. Emotional affordance is an assessment of how one thinks one would be affected by an experience. It is much more a property of the thing being evaluated than the person making the evaluation. However, the person's plan,

constructs and past experiences would make the evaluation unique to the expected person-place transaction. An *emotional episode* includes a mood, the attribution of the mood to a specific cause, and a conscious plan of action corresponding to the mood or its cause. That is, the person is consciously aware of his current mood and has identified the cause of the mood (the object with an emotional affordance). Moreover, the person's plan for the immediate future (be it a behavior or a thought process) is directed at the cause of the mood with the intent of maintaining, enhancing or changing the current mood. An example of an emotional episode is the prototypical emotional state such as fear where the person's behavior is directed at the object causing the fear (fight or flight). Many outdoor recreation activities may produce emotional episodes -- much more so than other aspects of day to day life. When one hunts, rafts, or climbs rocks one is typically aware that it is the recreation experience which is the cause of the mood. In addition, because it is a leisure activity where one has the freedom to choose one's plan, it is likely that the person's plan corresponds to mood and its cause. Typically, the plan would be modified only with the intent to continue behavior which maintains or promotes the mood state. As with mood, an emotional episode is likely to have a physiological correlate, but this is not critical to the definition. However, unlike mood, emotional episode must have a behavioral correlate.

Theory and Definition of Emotion Adopted for This Paper

The theory, and consequently the terms, adopted in this paper as a means to describe, predict and explain emotion will be referred to as PAD, which stands for Pleasure, Arousal, Dominance. In addition to having distinguished origins, this theory is appropriate for outdoor recreation concerns because it emphasizes person-place interactions. The theory has roots in the arousal work of Berlyne (1960); the evaluation, activity and potency dimensions of Osgood and associates (eg., Osgood et.al. 1957; Osgood 1969); the emotion theories of Mandler (1984), Lang (1984) and Schachter and Singer (1962); and the work by Mehrabian and Russell and associates (eg., Mehrabian and Russell 1974; Russell and Snodgrass 1987; Russell and Pratt 1980; Ward and Russell 1981; Russell and Stiger 1982). Emotion is described using a three dimension space with pleasure, arousal and dominance as the dimensions. For example, an arousing and pleasant environment is exciting, a pleasant and unarousing environment is relaxing, a unpleasant and unarousing environment is boring, and a

unpleasant and arousing environment is hectic. The three dimensions are bipolar: very aroused to very sleepy, very pleasant to very unpleasant, very dominant to very submissive. These dimensions are not independent; however for practical, descriptive purposes they are often thought of as such.

Arousal is the primary dimension in terms of theoretical importance. It determines both the onset and the intensity of emotion. The qualitative types of emotion which we subjectively recognize are determined, in turn, by the levels of pleasure and dominance cognitively attributed to the arousal. Berlyne defines arousal as "one of the variables that would have to be assigned a value if the psychological condition of a human being or higher animal at any particular time were to be adequately described. It is a measure of how wide awake the organism is, of how ready it is to react. The lower pole of the continuum is represented by sleep or coma, while the upper pole would be reached in states of frantic excitement" (1960: 48). Mandler (1984) suggests autonomic arousal has two main adaptive functions: homeostasis and alertness. Homeostatic concerns include the organisms need to maintain life and be able to respond to threats. Alertness refers to the need to attend to, interpret, and analyze the environment in order to identify potential threats and potential benefits.

Although environmental factors which influence emotional state will be discussed in detail in section three of this paper, some discussion of the factors which trigger arousal are introduced here in order to adequately define the construct. There are multiple aspects of arousal: electrocortical, behavioral and autonomic among them. Distinctions among these different systems are not made here. Instead arousal is viewed as a state of the organism as a whole, which may be the result of one or more of these physiological systems. The factors likely to influence arousal fall into three broad categories : 1) a discrepancy between expected and actual environments or, similarly, an interruption of a "plan", both requiring cognitive and perhaps physical effort and hence arousal; 2) the type, magnitude and complexity of perceptible and nonperceptible environmental stimuli (including collative properties, social stimuli, and meaning); and 3) chemicals such as neurotransmitters, narcotics, caffeine, alcohol, sugar, adrenalin. The discrepancy and interruption factor is most illustrative of arousal as conceived here and thus only this factor is discussed in this section.

Personal construct theory (Kelly 1955, Banister 1962, Downs 1970, Harrison and Sarre 1975) is proffered as a explanation of how humans construe, evaluate and respond

to environments (in general). It suggests that in any given situation there is simply too much information to cope with and that human information intake must be structured in some fashion which helps identify relevant bits and ignore the rest.

Man looks at his world through transparent patterns or templates which he creates and then attempts to fit over the realities of which the world is composed. The fit is not always very good. Yet without such patterns the world appears to be such an undifferentiated homogeneity that man is unable to make any sense out of it. Even a poor fit is more helpful to him than nothing at all.

Let us give the name *constructs* to these patterns that are tentatively tried on for size. They are ways of construing the world. They are what enables man, and lower animals too, to chart a course of behavior, explicitly formulated or implicitly acted out, verbally expressed or utterly inarticulate, consistent with other courses of behavior or inconsistent with them, intellectually reasoned or vegetatively sensed. (Kelly 1955: pgs. 8-9).

Similarly, the notions of schemas and prototypes proffered by Mandler suggests that there are mechanisms which represents "the organization of environmental regularities. Schemas are the primary representations of our physical world. In that function, they are the mental counterpart of all events and objects that we regularly encounter" (1984:65). These mental counterparts (constructs, schemas, or whatever we chose to call them) become both our expectations of what we predict we will encounter in an environment and our tools used to decode and understand the environment. If the physical environment differs significantly from these mental counterparts, then significant mental energy will be required to reach an understanding of the situation. This requires the organism to attain a higher level of activation. Hence a higher level of arousal is associated with environments which are not easily construed and/or don't fit nicely into previous experiences or current expectations. Likewise, a person always enters an environment with a "plan." If the environment is such that it in someway hinders accomplishing the plan then the plan will be "interrupted" and modified in order to improve the likelihood of its success. That is, the organism must invest extra mental energy in the task of modifying the plan to account for the environment and/or modifying the environment to allow accomplishment of the plan. Additional physical activity may also be required. In either case, a higher level of arousal is required.

Discrepancies and interruptions increase arousal in amounts corresponding to the energy needed to close the gap in the person-environment fit. Thus the capabilities of a person to fix the problem is another important determinant of arousal. Persons which possess the skills to comprehend the problem, the skills to solve it, and confidence in

those skills require less energy and hence less arousal to solve the problem (see Lazarus, 1982, for an interpretation of this from the perspective of emotion theory, Cohen and Evans, 1987, and Antonovsky, 1987, for an interpretation from the perspective of stress theory). This character of this person-environment interaction is referred to as "dominance," which is defined here as the actual or perceived control one has over an environment. The predictability and legibility of environmental features, the control one has over these features, the strictness of socially sanctioned behavior in the setting, the confidence in one's abilities, and the perception of personal territory, are some of the characteristics which influence dominance.

Russell and some colleagues (Russell and Pratt 1980; Russell 1980; Russell and Steiger 1982) concluded that dominance was not a relevant dimension of emotion. Most of the evidence for this conclusion is derived from factor analyses of semantic differential studies. In numerous studies in numerous settings they found dominance accounted for only a minimal amount of the variance in persons' descriptions of their emotions. However, given the interpretation of emotion presented here, it seems likely one reason dominance was not found to be a major dimension in their studies is that individual differences were ignored. It seems likely that persons with good environmental skills and confidence in those skills would have very different assessments of environmental dominance than persons with low skills and no confidence. If the high and low skills persons were averaged together the result would be to cancel out the impact of actual or perceived environmental dominance. Thus the dominance of environmental features depends to a large extent on what one plans to do with them and whether or not they need to be manipulated in order to achieve the plan. Ignoring differences among raters' plans would artificially deemphasize dominance as a dimension of emotion. Unfortunately in many PAD studies potential individual differences were ignored. Subjects making emotional evaluations of places had no valid, salient plan (or perhaps had conflicting plans) and thus would have no reason (or perhaps conflicting reasons) for interpreting the dominance of environmental features. This lack of control might deemphasize the dominance dimension in the factor analytic studies and thus dominance may be an important dimension despite the findings of these studies. Moreover, dominance seems likely to be a very relevant dimension of emotional experiences in outdoor recreation activities. Nature is sometimes seen as a very nonthreatening stimulus, allowing the R to relax. In other situations the power and majesty of the environment is awe inspiring. Likewise, some activities (i.e., hunting) evoke very dominant feelings while other activities (i.e., standing at the edge of the Grand Canyon) may evoke feelings of

insignificance and minimal power. In any case, the theory of emotion adopted for this paper includes a dimension reflecting the character of dominance.

Pleasure is the third dimension of the PAD emotion theory to be discussed. The definitions of both arousal and dominance have involved mostly cognitive casual factors. Dominance, as defined here, is almost totally determined by factors involving cognition (i.e., it depends on the plan). Likewise pleasure is defined here as primarily the result of cognitive evaluations. It is characterized by feelings of satisfaction, comfort, enjoyment, and beauty. It results from the successful completion of a plan, the attainment of a goal; or, more generally, it results when specific behavior or cognitive actions seem to be leading to the successful completion of a plan. Conversely, displeasure will result from repeated interruptions or discrepancies which hinder the completion of a plan. Minsky (1986) suggests that pleasure is the mind's "accounting system." It is the mechanism by which the different agencies (plans and subplans) of the mind, each a goal driven subsystem, communicate with one another and identify the most acceptable course of action. The overall feeling of pleasure or liking, therefore, is an aggregate measure of the successes of the mind's many competing subsystems. A strong feeling of pleasure implies that many of the mind's different agencies are successfully attaining their goals. Pleasure may also result from obtaining a desired level of arousal. That is, the organism may have a preset, preferred level of activation which it attempts to maintain. Thus pleasure and arousal are not always independent, which is what Berlyne (1960) found to be the case when he identified the inverse "U" relationship between arousal and preference.

There are other determinants of pleasure which are not so clearly tied to the person's plan. Mandler (1984) identifies three sources of emotional "value," which can be interpreted, at least in part, as reflecting the pleasure component of PAD emotion. The determinants of emotional value (pleasure) are: innate tendencies, culturally learned tendencies, and structural properties of stimuli. The innate sources of pleasure include obvious things such as the dislike for pain and liking of sweets. In terms of outdoor recreation the landscape "preferenda" of Ulrich (1983), the prospect-refuge of Appleton (1975), and the mystery and legibility of the Kaplan and Kaplan (1982) fit into this category. The cultural values are those things learned and generally accepted. They include such things as hot peppers (Zajonc and Markus 1984) and probably the frequently found preference for natural over man-made landscape features. The structural properties which influence pleasure are derived from the discrepancy

between objects and expectations, and the interpretation of the discrepancy. It is based, in part, on some aspects of structuralism and Gestalt psychology and probably subsumes several of the design axioms such as harmony and unity in diversity.

Dominance and pleasure are evaluations which interact with and interpret emotional arousal. That is, in addition to influencing the amount of arousal, the pleasure and dominance associated with the person-situation transaction are also used to interpret the nondifferentiated arousal, resulting in the nuance of consciously felt emotion. An important point to note is that pleasure, arousal, and dominance are characteristics of persons, not environments. Emotion is a property of a person, or more correctly, a property of the transaction between person and place. An equally important point to note is the critical role the "plan" plays in determining emotional state. Innate or culturally learned preferences are of secondary importance, and only then if the plan is not of critical importance to the organism.

3. DETERMINANTS OF MOOD STATE

The purpose of this section is to illustrate the enormous range of situational factors which influence mood states. Emphasis is placed on those environmental characteristics which may be influenced through outdoor recreation management. A person's mood in a given situation is influenced by numerous factors which include: prior mood, physical properties of the setting, other people, environmental meaning, characteristics of the activity, plans and memories and individual differences. The discussion in this section is oriented towards the impact of an outdoor recreation experience and outdoor environments on a recreationist (R), but the implications extend to most person-place encounters. Some of this information is presented in a recent review article by Russell and Snodgrass (1987). The impacts of environment on mood are well documented and only a select sample of the entire literature is reviewed here.

Pre-Arrival Mood

The mood associated with the immediate past is likely to have a significant impact on current mood. Recall that emotion, as defined here, results primarily from the

cognitive evaluation of a situation. Also consider, as will be discussed in more detail in section four of this paper (Impacts of Mood), that a person's mood colors cognitive evaluations -- for example, when in a positive mood one tends to evaluate things in a positive light. Thus, if one enters an environment in a good mood, one is likely to evaluate things positively and be more likely to maintain that good mood. In addition, recall that the major determinant of emotion is arousal. Thus, one's level of arousal when entering a new setting is critical. It is the level which must be changed to evoke a new mood. The notion of adaption level (Helson 1964) suggests that an organism eventually adjust to a prolonged exposure to most level/types of stimulation. It is the change in the type or level of stimulation from that point that evokes a response from the organism. Russell and Lanius (1984) found support for this phenomenon in emotion in human subjects viewing landscape photographs. They demonstrated that when subjects were exposed to new settings, the type and intensity of emotion attributed to that place was determined, in part, by a type and intensity of mood associated with the previous mood generated by the previous landscape.

Thus, it appears that prior mood is an important determinate of present mood. The determinants of prior mood therefore deserve our consideration. Unfortunately the discussion gets very circular at this point because a major determinant of prior mood is prior mood, which is determined by prior mood, and so on. Many of the factors which impact mood are discussed later in this section, they include individual differences, the physical setting, activity, and memories and so on. Because these factors influence mood they also influence prior mood and thus the discussion in this paper relative to mood also applies to prior mood. However, two factors which influence prior mood -- travel and expectations -- are particularly relevant to outdoor recreation and are discussed here separately. As is discussed in detail elsewhere (Clawson and Knetsch 1966, Hammitt 1980) recreation experiences include much more than the on site experience. There are moods, benefits, satisfactions and so on attributed to the five stages of an outdoor recreation experience: planning, travel to, on site, travel from, and recollections. Both the planning and the travel to the site are likely to influence R's mood prior to arrival. The planning involves numerous expectations and images about the recreation experience and these by themselves have been found sufficient to alter mood. For example, Mehrabian and Russell (1974) and Sherrod and others (1977) have found that subjects who imagine what it would be like to be in a pleasant or arousing place actually respond and behave as if they were experiencing that mood-- the conclusion reached is that subjects can evoke a mood by thinking of a situation which evokes it. In fact,

thinking about an emotional situation is one of the means researchers use to evoke emotion in subjects (Vellen 1968; Silverman 1986). Thus planning for a recreation experience may influence R's mood prior to the actual experience. Travel is a significant aspect of most recreation experiences. This travel may be stressful or pleasant depending on comfort, the amount of control one has over the process, the social companionship, and the length of the trip. These factors can combine to produce strong positive or negative mood states in R prior to arrival at a recreation site and thus influence the mood associated with the recreation experience.

The Physical Setting

The physical setting has significant impacts on a person's mood. The environment influences mood in several ways, each will be discussed in turn: imperceptible physical stimuli, perceptible physical stimuli, collative properties of the physical stimuli, meaning associated with the physical stimuli, the social environment, and, perhaps most importantly, the degree to which the environment meets expectations and facilitates R's plan. The impact of the environment on R's mood may or may not be consciously recognized. In most cases, either the R is not aware of the change in mood (although mood is still having an impact) or he has not attributed the mood to any particular cause. Most impacts of the environment on mood are subtle and unconscious but nonetheless significant.

Imperceptible Stimuli

There are an infinite number of imperceptible stimuli which may impact mood. Just because a stimuli is outside the range of a sense organ does not imply it does not impact us. The most obvious examples include chemicals one breaths or ingests. Carbon monoxide, lead, and other chemicals cause feelings of fatigue, aggression, anxiety, and so on (Anderson 1982; Schulte 1963). Positively or negatively charged ions are also suggest to influence mood, although the evidence is conflicting (Hawkins 1981). Food intake is likely to influence mood, especially if the diet contains carbohydrates, caffeine, or other foods which will increase arousal (Christensen, Krietsch, White and Stagner 1985; Wurtman and Wurtman 1989). Imperceptible sound also influences mood. Evans and Tempest (1972) found sounds produced by cars which were outside the audible range created moods similar to the feeling of being drunk. Wurtman and Wurtman (1989) offers evidence which suggests exposure to light impacts mood. Zajonc

(1980, 1984) argues that affective assessments are made using "preferenda" which are characteristics of environments too vague to be recognized and defined by the cognitive system (Ulrich, 1983, has extended this model and applied it to natural landscapes). These characteristics of stimuli would be unrecognizable in the classic sense. He suggests it is likely that the preferenda are different than the "discriminda" used by the "cognitive" systems to evaluate stimuli.

The evidence of mood altering properties of imperceptible stimuli is weak but growing. It certainly cannot be dismissed. The potential impact of imperceptible stimuli seems significant in natural environments. Humans evolved in a natural environment and thus may be sensitive to that environment in ways which we are not consciously aware or perceptually sensitive. The types and amounts of sounds, smells, ions, and electromagnetic radiation in a natural setting are likely to be significantly different than what is found in a high rise building. Perhaps these imperceptible stimuli have a desirable and significant impact on mood, one which cannot be duplicated by an artificial environments, or in overly developed recreation sites. Unfortunately there is a dearth of research on this topic so no conclusion is available.

Environmental stimuli

Light, sound, smell, vibration, taste, temperature all influence pleasure, arousal and dominance in demonstrative ways. Mehrabian and Russell (1974) and Russell and Snodgrass (1987) summarize much of the available literature. The conclusion reached from this extensive literature is that mood can be manipulated through alterations of physical characteristics. For example, arousal may be increased by increasing light intensity or sound intensity.

Collative properties

Berlyne (1960) theorized and tested for generalizable properties of physical stimuli which determine the intensity of a person's exploratory effort focused on the stimuli. Wohlwill (1976) subsequently adopted and extended these properties to evaluate natural landscapes. These properties include: complexity, novelty, incongruity, surprisingness, and ambiguity. They reflect aspects of the stimulus field which engender an exploratory response in the observer. Part of the rationale behind the collative properties is the

unrealistic expectation that any organism can respond specifically to each of the infinite number of possible variations in sensory stimuli. There must be some mechanism which aggregates over time, space and sense organ the various sensory stimuli. The organism, then, responds to this aggregation. The collative properties represent, in a manner which attempts to be generalizable to all stimuli, the amount of information present in the stimulus field. The more information there is, the more the effort required to decode it; hence, the higher the arousal of the organism. In the context of the emotion theory presented above, the collative properties are related to the mood evoked by the stimuli because they influence the organism's level of arousal. Berlyne identified these properties through experimentation using abstract, meaningless stimuli. Although they have been applied with some success in the past, they unfortunately don't work especially well as predictors of persons' moods, preferences, or beauty assessments in real environments. They simply don't account well for the emotion inducing information associated with environmental meaning (Fenton 1985, Whitfield and ???). Meaning associated with environmental features is an important determinant of mood which is discussed in more detail below.

Kaplan and Kaplan (1982) describe a similar information processing based theory with slightly different terms: mystery, legibility, coherence, etc. If the stimulus (landscape, abstract drawing, music) has more or less of these characteristics then the observer would be more or less aroused and hence more or less likely to act, prefer, and/or experience a change in mood. These terms and their applications are very well documented elsewhere (i.e., Wohlwill 1976; Berlyne 1960; Kaplan and Kaplan 1982; Russell and Snodgrass 1987) and will not be elaborated on here. It is worth noting, however, that the visual management systems adopted by agencies who manage public lands use constructs similar to collative properties (diversity, harmony, uniqueness). However, the rationale for these systems is not grounded in information processing theory. Instead, the rationale is based on a mix of landscape architecture design principles, ecological concerns, some information processing theory, and empirical, atheoretical findings (see Feimer et al. 1981; Hull 1988; Smarden et. al 1986).

Meaning

Most physical settings contain (symbolize, convey, evoke) meaning about appropriate behaviors in the place and about the people who regularly use the place (Rapoport 1982; Norman 1988; Stokols 1981; Csikszentmihalyi and Rochberg-Halton 1981). Nature

conveys such meaning. Knopf (1987) identified four broad classes of meaning that nature symbolizes in wild environments: life itself, continuity or enduringness, forces greater than humans, mystery and spirit. In residential areas, nature symbolizes social status, as well as neighborhood attributes such as privacy, seclusion, family oriented activities, and peaceful, friendly neighbors (Hull 1989). Characteristics of outdoor recreation areas convey meaning about most every aspect of a recreation experience: parking lots are for cars, trails are for walking, ball fields for organized sport, scat symbolizes wildlife, fire rings represent camping, tents claim territory, graffiti and litter suggests a lack of supervision or lack of concern.

Meaning is a major determinant of emotion and there are a multitude of ways meaning impacts emotion. Only two types of impacts attributable to environmental meaning will be discussed here: 1) the interaction between environmental meaning and the attempts at completing a plan and 2) object specific meaning that evokes emotion over and above any implications for a person's plan. The interaction between environmental meaning and personal plan are significant. Meaning in the environment is used to evaluate the obstacles which stand in the way of completing a plan and the resources which are available to help complete a plan. Thus meaning in the environment directly influences the arousal resulting from one's attempts to carry out a plan. For example, the meanings associated with a clear, cool yet small stream depends on whether one is thirsty, fishing, lost, or trying to canoe. Norman (1987) describes the necessary yet sometimes confusing meanings associated with everyday objects. He argues that it is the meaning and information stored in the object and evoked by interaction with a person which is the key to successful, easy to use objects and tools. Finally, discrepancies between mental schema and environmental stimuli can occur in characteristics of meaning as well as in characteristics of physical stimuli. That is, the meaning evoked by a setting may be incongruent with that expected and this may result in increased arousal required to attend to and alleviate the discrepancy.

The arousal resulting from plan interruptions and schema discrepancies is undifferentiated; it lacks subjective qualities. It was suggested above that arousal is interpreted in the context of pleasure and dominance and together these three dimensions describe the subjective emotional state. Interpretations of pleasure and dominance are largely determined by the meanings associated with the socio-environmental situation. Whether something is pleasurable or controllable depends upon the context of the situation. For example, the sensation of falling is very arousing and can be interpreted

very negatively as fear or stress unless the context is pleasant and under control, as is the case in parachuting and riding a roller coaster. A similar distinction is made when a situation is evaluated as frustrating rather than challenging.

A second impact on emotion of environmental meaning results from learned or innate emotional reactions which occur in response to particular stimuli. The emotional reaction occurs despite the plan. The meaning associated with an object can be sufficient to evoke either general arousal or a specific emotional response. Mandler (1984) uses a gun as an example of an object which, because of something learned, has acquired the ability to evoke arousal and fear in persons in our society. Some objects and settings may evoke similar emotional responses in all members of a group (culture). Meanings associated with other objects and settings may evoke emotions which differ from individual to individual, such as one's Mom, home, or a particular memento of a past experience. Nature (Wohlwill 1983; Kaplan 1983; Knopf 1987; Ulrich 1983) and water (Ulrich 1983; Hertzog 1985) have been suggested as physical features which evoke pleasure responses in most all persons. Blood and perhaps snakes and fast moving objects are examples of environmental stimuli which evoke innate, preprogrammed emotional responses. Another example is the human face which evokes an expression of happiness in most infants (Izard 1977).

People

One of the more arousing and salient features of any environment are the other persons in the environment. People are unpredictable and powerful. They can easily disrupt one's plan. Other persons compete for resources and space (i.e., they can get in "line" before you, take the last chair, or eliminate solitude), they can threaten well-being (i.e., crime), and they can easily disrupt efforts to concentrate or relax (i.e., by striking up a conversation). They must be observed, analyzed and their behavior predicted so that any threat to one's plan may be mitigated. This requires increased attention and level of activation on the part of the observer (i.e., arousal). The presence of other persons also places enormous restrictions on one's own appropriate behavior since it is available for observation. This is likely to influence feelings of dominance and arousal. Moreover, self-referent behavior theory (Kaplan 1986) and self-presentation theory suggest that we modify our behavior in order to project an image to others that we think they want to see. Without going into the mechanics or rationale for this behavior, it is enough to note that it requires considerable cognitive effort and

hence yet a higher level of arousal; it may also result in a changed mood state if one feels that others expect them to exhibit particular emotive qualities (i.e., the Glee club image of always happy and peppy)

The literature on crowding, territory and personal space is full of examples of the salience of people on the mood, satisfaction and behavior of recreationists (eg., Baum and Paulus 1987). The presence of other person's can also impact feelings of dominance and pleasure. The impact depends on the quality of the other people (e.g., friends, enemies, unknowns) and the personal plan (e.g., socialize, meditate, team sports). Thus the impact of other persons on the quality of mood state depends upon situational factors. Perhaps the notions of crowding and social carrying capacity of recreation sites may be relevant predictors of R's arousal level.

Plan Interruptions

"From our point of view, the single most important thing that a person brings to an encounter with the environment is the plan. Presumably the place was chosen to maximize success of the plan, and presumably the place will be viewed positively if it does so. If the place hinders the plan, it will be viewed negatively. Indeed, the single most important environmental variable affecting mood ... may be the environment's ability to fulfill the goal" (Russell and Snodgrass 1987: 266-267). The plan-person-environment interaction will influence feelings of pleasure, arousal and dominance. Interruptions in the plan caused by environmental obstacles require attention and energy, this requires a higher state of arousal. Moreover, the level of intensity required by the plan is directly linked to arousal. Some plans simply require lower levels of activation (eg., sunbathing, reading) than others (eg., hunting, rock climbing). The perceptions of ones' abilities to manipulate the environment and/or modify the plan in order to achieve the plan's goal despite environmental obstacles pertains to the feeling of dominance. Successful plan completion and/or actions which seem to be leading to successful completion will promote feelings of pleasure and satisfaction. The person's plan is the key element in the theory of emotion presented in this paper.

Schema discrepancies

As mentioned earlier, one enters an environment with expectations concerning its physical form and its meanings. These are the schema (Mandler 1984), constructs (Kelly 1955), mental counterparts to the physical reality, or what ever we chose to

call them. They guide the "top-down" processing of our information processing when we attempt to make sense of the physical world (Lindsay and Norman 1977). When the schema are inaccurate or not specific, attention and energy of the organism is needed to understand the discrepancy and correct it. Kelly (1955) and Brunswik (1956) present evolutionary based arguments that Man must be intrinsically motivated to form, test, and upgrade schemas. Without accurate schemas too much energy would be wasted figuring out each environment as if it were unique and just encountered for the first time. This would leave too little time and energy to devote to the demands of survival. Moreover, without accurate schemas, and a desire and mechanism to upgrade them, the organism is likely to keep making the same mistakes. This, too, would be detrimental to survival. Thus, forming, testing and upgrading schema are important. This process takes cognitive energy which likely increases arousal, especially when a notable discrepancy exists. Purcell (1984a, 1984b) has used this theory to test predicted preferences for buildings and objects based on the similarity of the building or object to prototypical images. Research applying this theory to outdoor recreation settings was not found during the review of literature conducted for this study. However, numerous recreation studies do examine the impact of Rs' expectations on Rs' satisfaction. Much of this work is based on attitude theory, but some of it might be usefully framed in the theory presented by Brunswik (1956), Kelly (1955) and Mandler (1984).

Nature

It has been suggested that nature, in general, evokes a positive emotional response (Kaplan 1983, Ulrich 1983, Wohlwill 1983). Perhaps the emotional response to nature is an innate response program such as that suggested by Appleton (1975) in his theory that persons prefer landscapes which offer both prospect and refuge, such as what would be found in the landscapes in which the Human species evolved. However, these theories must account for the fact that nature has only recently (recent in the historic sense) been associated with positive values (Nash 1972). In a review of the recreation literature Knopf (1987) concludes that nature seems to be associated with positive emotional qualities such as pleasure, relaxation and tranquility but suggests that the real impacts of nature on people is largely unknown:

"It is not clear what can safely conclude from such information. Can the findings be attributed to social desirability or investigator bias ...? Do they suggest that people value the intrinsic aesthetic properties of nature? Or do they merely reflect the fact that people perceive nature as important -- not for its own sake but for purposes of

accomplishing more fundamental goals of withdrawal, social interaction, and competence building? Certainly, the data imply that nature is important to people - but they do not address the more challenging question of whether people perceive in nature unique and beneficial properties that cannot be attributed to any other stimulus" (803).

Recreation Activity

Recreation activity is the major determinant of R's plan: sunbathing requires a different plan than pleasure driving, hiking, or hunting. One of the notable characteristics of recreation activities is that the plan is very salient. R's activities while recreating are guided primarily by the plan decided on before engaging in the activity. This is very different from activities and plans which make up nonleisure pursuits where forces influencing one's plans and actions are under less direct control – there is less free will. Having control over one's plan, and the consequent salience of it the plan resulting from this control seems to be one of the distinguishing characteristics of recreation. Four factors are likely to influence the level of arousal associated with recreation activities: the requirements of the activity for successful completion of the goal/plan, the number of people involved, the fit of the environment with the activity, and the quality of the environmental setting associated with the activity. It seems outdoor recreation management emphasizes the last factor, and thus opportunities for more effective management of Rs' mood states may be overlooked.

Recreation activities differ from one another in the level of activation required by R. The solitary rock climber requires high levels of activation: physical dexterity skills must be accurate for precise bodily movements, sense organs (especially balance) must be alert, and cognitive processes must be sharp to evaluate route, positions and holds – in short, success of the plan demands high levels of alertness. In contrast, a solitary sunbather is left with minimal demands on motor, sense, or cognitive systems – success of the plan depends only on the sun. Recreation activities range between the two extremes of risky behavior (i.e., rock climbing) and mentally vegetative, solitary behavior (i.e., sunbathing) in the level of activation required of the R in order for the plan to succeed. Thus the activity itself is likely to be a major determinant of mood type and intensity.

Activities which involve other persons involve higher levels of activation for all the reasons mentioned above in the discussion on people. People are salient environmental feature regardless of activity. They require attention because they are unpredictable and demand an active role playing on the part of the Rs in order to portray self as one wants or thinks one should be portrayed. Thus the number of persons R contacts during her experience and/or the number of persons in her group is likely to be a major determinant of mood state.

The environment itself will influence mood state by how well it facilitates plan completion. Some activities are less demanding in terms of specific environmental needs (i.e., picknicking, hiking) than are others (i.e., golf, hunting). If the plan is blocked by environmental obstacles, the resulting mood is likely to be negative and intense. Finally, it is often the case that the environment associated with an activity is a source of pleasure and arousal. Rock climbing is usually associated with views and rugged topography which enhances both pleasure (beauty) and arousal. Rafting or boating is usually associated with either placid, relaxing lakes or roaring, exciting rivers. Most activities, however, can successfully be undertaken in a variety of environmental conditions and thus the impact of environment on mood may not be exclusively associated with the activity. Nonetheless, whatever the environment is, it is likely to have a significant impact on mood state.

Memories

Changes in mood caused by recollection of a leisure experience have been shown to exist (Hammit 1980), yet there is little research on this topic. Csikszentmihalyi and Rockberg-Halton (1981) examined the significance of household objects in persons lives. They found that many objects which served as symbols of persons' past evoked strong emotional reactions, in several cases bringing subjects to tears. The recall of meaning and past associations evoked by household objects was enough to trigger strong emotional reactions. Perhaps the same phenomenon occurs when remembering recreation experiences. In fact, recall of experiences is one of the major methods for evoking mood in subjects in psychology laboratory studies (Silverman 1987; Vellen 1968). Strong antidotal evidence exists to suggest that recalling and telling others about recreation experiences is a common event – the story about the fish that got away is a classic example. What purpose does this serve? Perhaps one purpose is that recollections evoke strong, positive moods states -- which is a desired and sought after

state. As suggested by Clawson and Knetsch (1966) it seems likely that the value of recreation experiences far exceeds the values associated with the on-site experience, especially when one considers the ability of recollection to alter mood.

Individual Differences

There are numerous differences among individuals which influence how a situation influences one's mood. Zukerman's (1980) arousal seeking tendency and Mehrabian's (1976) screening tendency are two factors. A person with a high arousal seeking tendency will seek out arousing situations. Perhaps high arousal seekers will chose risky recreation activities and low arousal seekers passive activities. Screening is a characteristic of persons which is orthogonal to arousal seeking. It refers to the sensitivity of R to arousing stimuli. A screener will be less aroused by novel and exciting stimuli than a nonscreener. This may partially explain why some Rs get more excited than others when confronted with novel scenes or exciting activities. Important individual differences also include R's attitudes about the situation. Craik (1983) found that personality variables such as self-rated liberalism accounted for a significant percentage of the variance in preference judgments. Examples relevant to outdoor recreation include Anderson's (1981) finding that the names of forest lands (i.e., commercial versus wildland) influenced preference judgments and Buhyoff and Riesenman's (1979) finding that observer's knowledge of forest condition (whether it was the result of insect damage) influenced ratings of landscape beauty. Caution must be exercised when interpreting these last few examples because they refer to individual differences impacting preference and beauty judgments rather than emotion. However, it has been suggested that emotion evoked by recreation experiences is related to preference and that beauty can be viewed as a component of the pleasure dimension of the PAD emotion model (Hull and Harvey 1989).

The theory of emotion outlined above places heavy emphasis on personal plans and schemas (constructs). Interruptions in a plan and/or discrepancies from environmental schema produce arousal, hence emotion. A R's plan will depend upon the selected recreation activity (i.e., hunting versus picknicking) and the desired end product of the experience (trophy versus escape). The same physical setting may facilitate one R's plan but not another. Hence, R's mood depends more on the plan than the setting. A R's schema is likely to be heavily influenced by past experiences, especially familiarity with the outdoor recreation setting. For example, a first time

visitor to the Grand Canyon may have gross expectations in the form of a mental image developed from stories and pictures but probably will not be as prepared as a regular Park Ranger for the magnitude of the landscape nor for the crowds, parking lots, and litter. The discrepancy between schema and actual landscape will impact the emotional experience. Because there are likely to be significant differences among Rs in plans and schemas it seems likely there will be differences among them in their emotional responses to similar settings. Note that these same differences should also impact the more familiar outdoor recreation constructs of satisfaction, preference, beauty, and the like. Thus, emotion is no less influenced by individual differences than the more traditional measures of recreation quality. It is also likely that there are more similarities than differences among Rs, mainly because Rs have similar purposes and hence similar plans.

The importance of plan in determining mood state suggests that the R's capabilities to cope with or have control over gaps in person-environment fit (i.e., an imbalance between a R's goals and the environmental opportunities) will influence R's mood state. This influence on mood pertains to the dominance dimension of the PAD emotion model. The flexibility and dominance of the recreation environment will increase perceived dominance only up to a point. The R must also have the skills to manipulate the environment and the motivation to use these skills in order to be dominant. One must have the ability to comprehend potential obstacles, the skills to manipulate the environment (or the skills to alter the plan in order to circumvent the obstacles), and the confidence to use these abilities (Antonovsky 1987, Evans and Cohn 1987). Csikszentmihalyi (1975) describes the positive emotional state of "flow" which he associates with intrinsic reward and hence may be thought of as the pleasure dimension of the PAD model. Flow occurs when environmental challenges are commensurate with a person's capability or mastery of the challenges. Thus flow requires certain levels of arousal (resulting from the challenge which is a gap in the person-environment fit) and requires a certain level of dominance (a level of mastery or control over the challenge). The result is a feeling of pleasure or flow (perhaps because the plan is being successfully implemented and the goals achieved). Rs within the same activity differ from one another with respect to their level of mastery and skill (i.e., Bryan 1979). This difference in expertise may not only influence the R's dominance but also the plan she chooses to implement (i.e., the difficulty of the plan varies with different goals -- a relaxing walk is less demanding than hunting a trophy). The bottom line is that Rs differ

in their skill levels and this may cause them to differ in their emotional responses to similar environmental settings.

Another important source of individual differences results from culturally based preferences (such as Mandler's cultural tendencies, discussed above, which influence emotional value). Hull and Revell (1989) found persons from different cultures to be different in their assessments of scenic beauty of rural landscapes. Differences in assessments were attributed to differences among persons in their interpretations of the meanings of several landscape features. Numerous other studies have found differences in assessment of landscape quality which can be explained in part by differences in people's background (Zube and Pitt 1981; Buhyoff et.al. 1983; Buhyoff et.al. 1978; Sonnenfeld 1967; Tip and Savasdisara 1986a; Duncan 1973; Lyons 1984, Fenton 1985; Schroeder 1983; Purcell and Lamb 1983; Abello' et.al 1986; Dearden 1980, for example). Mandler (1984) argues that "culture is a powerful teacher of evaluative judgments" and that the things one finds pleasurable reflects what one has been taught is pleasurable. Nonetheless there is considerable evidence suggesting that numerous similarities exist among what persons prefer, especially in natural landscapes. More specifically, similarities in scenic beauty evaluations of landscapes have been found among persons of different professions, socio-economic status, and culture (e.g., Shaffer and Tooby 1973; Zube and Mills 1976; Ulrich 1977; Tips and Savasdisara 1986b; Buhyoff and Wellman 1980; Buhyoff et.al. 1983; Daniel and Boster 1976).

This evidence suggests there may be an innate or learned mechanism which causes these similarities in landscape beauty assessments. However, it has been noted that the findings of similarities may be due to methodological shortcomings such as failing to provide respondents with a valid purpose (Hull and Revell 1989) and querying respondents about environments with which they are not familiar using constructs with which they are not familiar (Hull and Revell 1989; Ittelson and Daniel 1981). Both these factors would mitigate against the important sources of individual differences discussed earlier: plan and schema. The importance of these factors in determining mood (and most likely also in determining satisfaction, landscape beauty, preference) suggest that all recreation research be concerned about subjects having a valid purpose and reasonable familiarity with the environment they evaluate in order to insure a valid response.

4. IMPACTS OF MOOD

One purpose of this paper is to illustrate the powerful and significant impacts leisure experiences have on persons' moods. Hopefully the previous section accomplished this. But an equally, if not more important purpose is to demonstrate that a persons' mood has theoretically and socially relevant consequences. The purpose of this section is to summarize empirical research which illustrates some of the consequences of mood. The impacts of mood discussed in this section include on site impacts such as attention, behavior, and cognitions, and off site impacts such as behaviors, cognitions, and various aspects of health. The impacts are well documented and only a small sample of the literature is reviewed. Recall that one is always in some mood state even, as is probably most often the case, one is not consciously aware of it. Thus, it is important to note that many of the impacts of mood discussed below occur without conscious awareness.

On Site Impacts of Mood

Attention

Physical or social stimuli are much more likely to impact the behavior, cognition, satisfaction, or any other quality of R's state if they are first attended to. Mood state influences what is attended to in the environment and therefore can have a profound impact on subsequent cognition and behavior (Izard 1984; Mandler 1984; Frijda 1986). Recall that "interest" is one of the proposed "fundamental" emotions. One of its functions is to direct attention. Perhaps the impact of mood on attention is made most obvious when viewed from the perspective of arousal and stress. Increasing arousal increases the person's state of readiness for action. This increases the potential of the person to attend and react to environmental stimuli. When arousal gets too high (i.e., stressful or nervous situations) attentional capacity is reduced and the focus of attention is narrowed such that peripheral stimuli are ignored. If the ignored peripheral stimuli are relevant to the successful performance of a task then task performance will suffer.

Qualities of mood state other than arousal can influence attention. Izard (1984) reviews studies where subjects were simultaneously exposed, for a very short duration, to a happy face in one eye and a sad face in the other. Persons in happy moods reported

seeing the happy face more often than the sad. Similarly, Broadbent and Gregory (1967) found that the emotional content of words influenced whether or not they were perceived. They were not able to identify with confidence the mechanism causing this effect but did eliminate from consideration most factors not related to the emotional content of the words. Thus, it seems both the person's mood state and the mood evoking potential of the stimuli influence a person's attention to that stimuli.

Cognition

Numerous significant cognitive processes are influenced by mood: they include memory, perception of control, attribution, and rational evaluations. The effects of mood on *memory* is perhaps the best documented. In a review of the literature Gilligan and Bower (1984) summarize findings which suggest mood influences recall. Recall is more likely to be correct and efficient when the person doing the recalling is in a mood state similar to the mood state when the material was learned. Similarly, material/stimuli are remembered better if they evoke a mood similar to the current mood of the learner. Both these impacts have profound implications since they can influence what the person plans to do in the future (as discussed below). Note that it is not suggested that mood influences the absolute performance of memory (although this may be true). Rather, it is suggested that the availability of memories and the readiness with which they come to mind are influenced by mood and this, in turn, may have a significant influence on many things through its impact on cognitive planning, which uses recall.

One's mood also influences how one perceives one's self relative to the world (Moore, Underwood, and Rosenhan 1984). Positive moods tend to promote feelings of control, they even promote state levels of internal locus of control. Mood also affects attribution. A person in a negative mood is more likely to be critical and accept blame even when blame is not appropriate. Conversely, a positive mood is associated with self-reward, persistence at tasks, and positive expectations of future performances. There is even evidence that mood influences transient qualities of personality and self-concept. Happy persons describe themselves as more productive, as having higher self-esteem and as possessing higher levels of skill, competency and proficiency than sad persons. Similarly, mood tends to influence how people perceive others. "Happy people tend to be friendly, charitable and merciful in their judgments of others; angry people tend to be the opposite" (Gilligan and Bower 1984: 567). Mood also influences decisions made

about objects and situations. Razran (1938, 1940) demonstrated how persons' current moods, induced by putrid smells or free lunch, influenced persons' evaluations of political slogans or of others: pleasant mood increases pleasantness of evaluation. These findings have been replicated by manipulating the pleasantness of rooms (Maslow and Mintz 1956). Similarly, marketing research has found the mood evoked by advertisements and by products has been found to influence product acceptance (e.g., Kardes 1986; Batra and Ray 1986). Isen, Daubman and Nowicki (1987) suggest one possible mechanism for the impact of mood on cognition is that it influences the way cognitive material is organized which consequently determines the way information is perceived, recognized, and associated with other information. "The experiments reviewed indicate that an emotion can have a surprisingly strong influence on how someone thinks and acts in his social world.... Emotion ... seems to be inextricably related to how we perceive and think, influencing them at every turn" (Gilligan and Bower 1984: 568).

Behavior

Mood impacts behavior in part through its impact on cognition. Thus it is difficult to categorize some impacts of mood as either cognitive or behavioral. In any event, the impacts on behavior are extensive and those discussed here include task performance, altruistic behavior, communication, and motivation.

Performance of any task requires an appropriate level of arousal. The "Yerkes-Dodson" law suggests that the relation between arousal and performance is best represented by an inverse U. If arousal is too low the person is not alert enough to function, if arousal is too high then symptoms of nervousness and stress degrade performance. The optimal level of arousal is influenced by task complexity, familiarity, and skill level. Empirical support for this "law" is not strong (Frijda 1986). Nonetheless, evidence of the interaction between the various aspects of mood and the quality of task performance is extensive. Moore et al. (1984) note that sadness tends to increase learning time. Isen and others conclude that "...creativity, an important skill that is often thought of as a stable characteristic of persons, can be facilitated by a transient pleasant affective state. Moreover, the affective state sufficient to do this can be induced subtly, by small everyday events. This suggests that creativity can be fostered by appropriate modification of the physical or interpersonal environment" (1987: 1128). Previous

findings (Isen and Daubman 1984) lead to the conclusion that positive mood states reduced cognitive capacity and lead to lazy, inefficient, over generalizing problem solving behavior. The differences between these findings can be explained by differences in the subjects' tasks and expectations. For creative tasks the positive mood encourages exploratory thinking thus increasing creativity. For more routine tasks, the positive mood encourages complacency and lost productivity. Perceived dominance and control also influence performance (Mehrabian and Russell 1974; Webb, Worchell and Brown 1986). The greater the perceived control the better the performance tends to be. Positive mood is also associated with willingness to delay gratification and suffer immediate costs for the promise of larger, long term rewards (Moore and others 1984).

Prosocial behavior, such as altruistic and helping behaviors, tend to increase with positive mood. Berkowitz suggests this is because "... persons feeling happy at the time might interpret calls for assistance in a relatively favorable manner or might view positively those asking for help. In thinking positively about the world around them, they look at ambiguous people and behaviors in this generally positive light.... They may even regard themselves more favorably than they otherwise are inclined to do, and this positive self-conception could facilitate socially positive behavior" (1987: 722). It has also been found that negative mood sometimes increases helping behavior (Moore and others 1984; Soames Job 1987). An acceptable explanation for this phenomenon has not been found but it seems possible that persons in negative moods engage in prosocial behavior because it is socially desirable and hence may result in rewards which will change the negative mood to a positive one. Sherrod and others (1977) found such strong impacts on helping behavior to result from short term exposure to positive mood inducements that they concluded: "If 10 minutes of attention to ... [positive mood inducing stimuli] ... can exert such effects on social behavior as those obtained in the present research, one wonders about the consequences of actual physical environments on mood and behavior. It appears that, other things being equal, the quality of the physical environment may strongly influence the way in which people respond to each other" (1977: 369). On the other side of the coin, mood has been associated with antisocial behavior, such as cheating (Dinstbier 1984). In addition to helping behaviors, positive, mildly arousing mood tends to be associated with desire to affiliate with others (Mehrabian and Russell 1974). Thus, the mood evoked by an environment is likely to influence the type and the intensity of human interaction which occurs there.

Mood, as evidenced by facial expression, body posture, and tone of voice, is a powerful communicator. Izard (1971) documents how a person's expression reliably communicates one's own mood state as well as something concerning one's intent. Facial expressions of mood are understood by persons all ages from around the world. Izard argues that communication is a major function of emotion and is one reason for their existence (i.e., they enable quick, reliable communication of salient factors). Further studies (e.g., Dimberg in press; Ohman and Dimberg 1984; both cited in Dimberg 1987) support Izard's work and argue, from an evolutionary perspective, why humans are biologically prepared to react to facial expressions.

Emotion as a phenomena has been presented by several theorists as mechanism for motivating organizing, and sustaining human behavior (Izard 1971, 1977; Leeper 1970; Arnold 1970: see also Frijda 1986). Emotion is seen as a mental system, complementary to cognition, which initiates and sustains a pattern of actions (cognitive and behavioral) in response to a particular stimulus set with the intent of realizing a particular outcome. That is, emotion causes a person to respond to a stimulus in a way which has been successful in the past. In this sense, some emotions are seen as products of evolution in that the response patterns encouraged by emotion promoted behaviors which enhanced chances of survival. "Each emotion that emerged over the course of human evolution added a different quality of motivation and new behavioral alternatives that increased adaptive prowess. For example, interest, a very important positive emotion, motivates cognitive and motor search and exploratory behaviors, and anger mobilizes energy for physical action, as well as confidence in one's powers.... Both interest and anger, like each of the emotions, are significant determinants of selective attention and hence of the contents of perception and cognition" (Izard 1984: 18). Leeper (1970) argues strongly against those who present emotion (e.g., Young 1961) as a disorganizing response which disrupts behaviors. Leeper argues that disruption only occurs in extreme situations such as when all the person's attempts have failed and nothing seems to work so the person becomes so angry and frustrated that only disruptive, angry behavior results. He suggests that emotions are much more subtle, much more common and that most of the time they work to organize and direct behavior such as in "arousing and sustaining activity, in producing exploratory reactions, in facilitating learning ..., in governing performance or habit-use, in helping produce problem solving learning, in helping govern choices between alternatives, in producing willingness to endure penalties to reach some goal, or...." (Leeper 1970 153). Thus emotions may be powerful and useful forces in our lives which direct and sustain our

behaviors. A point of concern about emotions as viable motives for 21st century Man is raised by Geist: "In artificial environments, such as we occupy, severe intellectual control over our actions is essential, since our emotional responses need not be valid guides to the utility of our actions" (1979: 423).

Regardless of the exact mechanism by which emotions influence our behavior (performance, helping, expression, motivation, other) they seem to play a very significant role in day to day living. The extent to which leisure experiences impact mood is the extent to which leisure will impact these behaviors.

Physiological

Mood change, and emotion in general tend to involve some physiological correlate. This aspect of emotion is discussed in detail elsewhere (Ulrich et al., in this volume). Suffice it to say that the impacts include the following: autonomic responses (i.e., heart rate, blood pressure, respiration, electrodermal activity, sweating, gastrointestinal and urinary activity, pupillary response and trembling); hormonal changes (i.e., epinephrine, norepinephrine, ACHT, corticosteroids); and electrocortical responses (i.e., muscle tension).

Off-site impacts of Mood

Planning

The cognitive, behavioral and physiological impacts of emotion described above were presented mostly from the perspective of on-site impacts of current moods generated by on-site visits. The breadth and significance of these impacts are impressive in themselves, but the impact of mood is likely to be much more extensive. Recall that prior mood was one of the major determinants of current mood. This suggests that persons carry moods from one situation into other situations. Thus moods generated in one setting are likely to impact cognition and behavior in subsequent settings.

A person's past mood has the potential to "color" evaluations of new situations, the identification of future goals, and the development of future plans and hence future

behaviors, future moods, and future cognitions. Whenever a person enters an environment she evaluates it (Ittelson et al., 1974; Brunswik 1956), and as discussed above, these cognitive evaluations may be colored by current mood: when happy, the cup looks half full. These "colored" evaluations will have the impacts of perpetuating the current mood: when one starts off happy one is more likely to evaluate situations positively and consequently maintain the positive mood state. Likewise, a person's current mood may influence his goal and plan selection because mood impacts aspects of cognition such as memory and recall. That is, in order to identify a goal and construct a plan which leads to its accomplishment, one must access information from memory; and, since memory recall is colored by mood state, the plan of future actions, and consequently the future behaviors, may be influenced by the current mood state. It seems likely that the impact of current mood is exponential.

Health

Mood impacts health in a variety of subtle yet significant ways which include: the immune system, stress recovery, and strong self-concept. Stone and others (1987) demonstrated that daily fluctuations in self reported mood correlated with changes in the "secretory immune system ...[which is]..often described as the body's first line of defense against invading organisms" (988). Their results suggest that subjects' immune systems were strongest during times of positive moods such as those that would be associated with leisure activities. Other researchers have demonstrated that mood state (especially depression) correlated highly with health indicators such as changes in the immune system and actual occurrences of cancer (Maddi, Barton and Puccetti 1987; Shekelle and others 1981). A similar health related impact has been documented by Ulrich and Simons (1986). They examined the impact of video taped environments on several physiological measures after subjects were exposed to stress inducing films. The results ... "indicate that individuals recovered significantly faster and more completely from stress when they were exposed to natural settings as opposed to urban settings" (115). Admittedly this finding only pertains to leisure as long as the setting is natural. However, it does suggest that some activities (such as leisure or viewing video tapes of natural scenes) impact physiological characteristics associated with stress. This has implications for urban recreation management, and office and residential design.

Graef, Csikszentmihalyi and Gianinno (1983) found that persons experiencing intrinsically motivating experiences (i.e., experiences which produce positive mood) are more likely to have stronger self-concept. Literature reviewed by Moore and others (1984) supports this conclusion. They report findings of positive mood being correlated with higher ratings of self-esteem. Antonovsky's (1987) theory of sense of coherence accounts for why some people get sick and others don't, even when confronted with the same threats. He presents a convincing theoretical argument that persons with strong sense of personal meaning and self-worth are more likely to resist stressors and thus remain healthy. Thus, leisure activities may promote health by promoting positive emotions and intrinsically motivating experiences which subsequently promote a strong sense of meaning and self-worth and ultimately a stronger sense of coherence.

5. MEASUREMENT OF EMOTION

Mood states are subtle, often undetected by the person experiencing them. Normally we are not aware of our mood or how it is impacting us. Kagan (1984) makes an analogy of this phenomenon to a disease or illness. In the early stages of an illness one is generally unaware of the problem; then if the illness progresses, one becomes aware of some physical changes which are symptoms of the illness (e.g., pain, fever, sour mood) but still remains unaware of the specific cause (i.e., virus, cancer, heart). Even a trained medical doctor can have serious difficulty identifying and measuring the symptoms, let alone the specific cause of the symptoms. Emotions are equally difficult to assess yet no less relevant. Even though they exist all the time we become consciously aware of them only in when they reach acute levels, and then their impact is very different from their normal impact (i.e., they disrupt rather than organize). There are three broad types of measures for emotion: observation of nonverbal behavior (posture and facial expressions); assessment of physiological measures which covary with emotion; and recording verbal reports of subjective feelings. There is no agreed upon assessment method because emotion manifests itself differently under different conditions and because there is no agreed upon definition of emotion. It is agreed that multiple measures are generally desirable. Izard (1971) refined emotion assessment through use of observable facial expressions. Fridlund and Izard (1983) and Dimberg (1987) and others have since refined that procedure. Assessing facial electromyographic response patterns (imperceptible changes in facial muscles) provides reliable and

sensitive indicators of the pleasure-displeasure emotional response. However, Matsumoto (1987) notes methodological problems may exist in some studies (his critique pertains mainly to tests of the facial feedback hypothesis). Advances in physiological assessment technology enable more refined assessment of physiological indicators which tend to reflect the arousal component of emotion (see Ekman, Levenson and Friesen 1983; Frijda 1986 and Ulrich and others in this volume). There are many verbal report instruments. Work on instruments attempting to assess pleasure, arousal, and dominance has been undertaken by Russell, Mehrabian, and their colleagues (e.g., Russell and Mehrabian 1977; Mehrabian and Russell 1974; Russell, Ward and Pratt 1981; Russell and Pratt 1980; Russell 1980). Many other instruments exist which focus on other aspects of emotion (e.g., McNair, Lorr, and Dappleman 1978; Johnson and Myers 1967; Nowlis 1965; Thayer 1967). Some of these self-report measures have been found to covary with physiological measures (e.g., Thayer 1967).

Kagan (1984) notes that measurements meant to represent the three response systems (cognitive subjective assessment, physiological, and behavioral—including facial) represent different aspects of emotion and should not be expected to converge in all cases. Lazarus, Averill and Opton (1970) suggest that assessments of the different systems should be expected to contradict each other given the complexity of the relationships between psychological coping strategies, cultural and social constraints on expression, and innate biological programs. However, Dimberg (1987) has found some convergence.

Most of these measurement procedures are invasive. Thus, the assessment of mood itself may alter the subject's mood state. Physiological measures require electrodes, wires and laboratory instruments, as do assessments of facial electromyographic response patterns. Subjective, verbal reports require the person to stop what they would normally be doing and reflect on their mood state, something they would not normally do. Moreover, many of these procedures are laboratory based and/or require subjects to depart somewhat from their normal behavioral patterns. Given that one's plan has a significant influence on one's emotional state we must question the validity of mood assessments made while subjects have artificial plans or no plan at all. Such is the case in many laboratory experiments where subjects are seated in unfamiliar rooms and exposed to surrogate leisure experiences (e.g., pictures, stories, sounds) or surrogate situations (e.g., games, confederates). In addition to these problems, it seems likely that assessment procedures will force one to be cognizant of their mood state. This in itself seems likely to result in slightly different moods simply because one is forced to be

consciously aware of something they normally ignore. The simple act of introspection and self-assessment may modify the mood. Obviously there are numerous measurement issues which need to be resolved.

6. SUGGESTIONS FOR RESEARCH

There is a tremendous need for researching the links between mood and leisure activities. Four broad areas of research need developing: 1. Theoretical and empirical studies are needed to explore the role of emotion in leisure activities. At this early stage in the development of the field descriptive empirical studies are worthwhile. For example, little is known about the moods experienced during different recreation experiences or about the temporal characteristic of one's mood over a site visit and its relationship to short and long term user satisfaction and overall health and well-being. 2. Development of noninvasive mood measurement techniques is needed. Current methods are invasive and many are laboratory bound. Because a person's plan plays such a significant role in determining mood state, it is important that ecologically valid research be conducted. That is, subjects should have actual leisure experiences (valid plans) and not forced to be cognizant of experimental constraints. 3. It is important that the socially relevant impacts of leisure induced mood be documented so that leisure becomes recognized as socially relevant and worthy of investment and further research rather than being just a nice thing to do if enough resources are not already committed to other concerns. 4. In order to improve management of recreation sites and leisure activities, research is needed which assesses the impact on mood of manageable characteristics of the social and physical environment.

7. CONCLUSION

The purpose of this paper was to demonstrate, through a review of the literature, that mood is a significant, prevalent and relevant product of leisure activities in general and outdoor recreation activities in particular. To accomplish this, a definition of mood was put forward which hopefully will promote constructive debate about issues pertaining to mood, leisure, and outdoor recreation. Mood was defined as being composed of three

major dimensions: arousal, pleasure, and dominance. This definition was tied to several established emotion theories. Arousal is the most important dimension. It results mostly from cognitive, but not necessarily conscious, evaluations of situations. The most salient cause of mood change is related to one's plans and goals, which are assumed to be a pervasive part of one's life in the 21st century. The degree to which one's goals are facilitated or blocked determines one's mood state. It was noted that mood state can change in response to innate programmed responses to select stimulus sets and/or preferenda but that these situations are thought to be rare and overshadowed by cognitive factors influencing emotion.

Mood was introduced as a integral part of many leisure theories and as a likely product of leisure experiences. Mood can be significantly influenced by characteristics of the physical and social setting. Many of these environmental characteristics are under the control of environmental management, suggesting that mood is somewhat under the control of recreation management. The significance of mood was demonstrated by reviewing the impacts of mood on one's cognitions, behaviors, and physiology. These impacts include learning, task performance, helping behavior, socialization, self-concept, and health. Perhaps the most significant impact of mood is its influence on the planning of future events and, as such, its influence on the behaviors and cognitions of persons long after they leave the leisure setting. It is important to note that these impacts of emotion are socially relevant -- in some cases they translate to dollars and cents. It may not be unreasonable to suggest that mood is one of the more socially relevant products of leisure activities. In fact, the benefits resulting from mood induced by a leisure experiences may be one of the major justifications to society for the expenditure of its resources on the provision, management, and study of leisure.

Despite the apparent significance of mood, little relevant research exists in the leisure and recreation research fields. Four broad areas of research need developing: theoretical and empirical studies of the role of emotion in leisure activities, improvements of noninvasive measurement technology, documentation of the socially relevant impacts of leisure induced mood, and assessment and understanding of the impact on mood of manageable characteristics of the social and physical environment.

Footnote.

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